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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/897,320	06/29/2001	George Hsieh	884.462US1	2051

7590 12/05/2003
Schwegman, Lundberg, Woessner, & Kluth, P.A.
P.O. Box 2938
Minneapolis, MN 55103

EXAMINER

THOMPSON, GREGORY D

ART UNIT PAPER NUMBER

2835

DATE MAILED: 12/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No. 09/087,320 897320	Applicant(s) BEYER ET AL	
Examiner Gregory D Thompson	Art Unit 2835	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 5/19/2003 and IDS filed on 8/25/2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 and 17-41 is/are pending in the application.
- 4a) ☐ Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 and 17-41 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413) Paper No(s) <u>11/4/2003</u> . |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>8/25/2003</u> | 6) <input type="checkbox"/> Other: |

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1. The Final action mailed 8/27/2003 is withdrawn in view of the Prior art filed 8/25/03. The IDS is now entered and the documents listed on the form 1449 will be considered.

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5, 17-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japan

'841 in view of Jones.

Japan discloses a substrate 4 having at least one hole 4a, a heat sink (plate) 2 with fins 2a having at least one leg 3 and a heat producing component 5 attached to substrate (printed board) 4 where the sink 2 is disposed over the component 5 with a thermal interface material 6 disposed between the sink 2 and component 5. The leg 3 is extending beyond hole 4a soldered to the hole 4a in Fig. 1 as discussed in paragraphs 0007-0010 of the translation provided by applicant. The leg 3 is straight and appears to be rectangular shaped in Figs. 1 and not shown or taught as a cylindrical pin.

Jones shows a sink 30' with a cylindrical shaped pin 38.

Therefore, it is considered obvious to one skilled at the time of the invention to construct the shape of leg 3 of Japan '841 into a cylindrical pin shape as taught by Jones to provide ease of alignment and mounting to board 4 thus providing a stable mounted sink 2 using less real estate (footprint) on a substrate 4 to provide excellent heat enhancement during thermal cycling in a low cost assembly.

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Japan '841 does not teach or suggest the use of the well known wave soldering process or reflow process done by a machine to attach the sink to the board and to preheat and couple the sink to the component with the thermal material to provide assembly.

However, it is considered obvious to one skilled at the time of the invention to use the well known processes of the machine to solder pin 3 to board 4 and couple sink 2 to component 5 in one process to save time, money and materials to provide attachment and thermal enhancement by providing a low cost thermal attachment solution.

Japan '841 does not teach nor suggest the well known thermal material of grease as material 6. However, to one skilled at the time of the invention it is considered obvious to use this well known material of thermal grease as material 6 to provide excellent attachment and thermal enhancement to avoid component 5 breakdown using a low cost thermal solution.

Japan '841 does not teach nor suggest what type of component 5 is. However, to one skilled at the time of the invention it is considered obvious that component 5 be the well known microprocessor to process information and be thermally cooled to avoid breakdown.

Japan '841 does not disclose the well known material of A1 for thermal enhancement. However, considered obvious to one skilled to use the well known material of A1 for excellent thermal enhancement to avoid component breakdown using a low cost material.

The broad method steps are fully covered by the detailed discussed above. The language of mounting, positioning, aligning, reducing, attaching, loading, preheating, cooling, wave

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soldering, forming, positioning mounting and disposing add no specific detailed method steps that are patentable over the discussion above.

3. Claim 17 is objected to because of the following informalities: claim 17 depends on a canceled claim 16. Appropriate correction is required.
4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Wendt, Amaro et al and Breese show pins.
6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Greg Thompson whose telephone number is (703) 308-2249. The examiner can normally be reached on Mon-Thurs from 6:00 AM to 4:30 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Darrn Schuberg, can be reached on (703) 308-4215. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.

G THOMPSON/pj

12/01/03

G Thompson
primary Ex.